

Since 1995, LIC has at various times surveyed portions of the Evans Road Tract for GCWAs to monitor their presence and location. The Wolverton tract was assessed by aci consulting and Horizon Environmental Services, Inc. (aci and Horizon) biologists and was determined to have been cleared of many Ash juniper (*Juniperus ashei*) in the mid-1990's. Occupied habitat remains in several steep drainages of the Wolverton Tract. At the suggestion of the Service, in 2004 LIC commissioned a GCWA survey covering a large portion of the Wolverton Tract. This survey confirmed GCWA presence in several drainages on Wolverton. The North Triangle tract was acquired by LIC in 2001 and was first surveyed for GCWAs in 2002 and was again surveyed in 2004. The Service also analyzed this data and has determined GCWAs occupy much of the North Triangle Tract, at relatively high densities. The North Triangle portion of Master Phase II is adjacent to and north of an area owned by others, planned and dedicated in perpetuity for conservation of the GCWA pursuant to an agreement between the owners and the Service. In addition, there is an area to the south and west that is considered to be largely un-developable (due to severe topographic constraints and flood plain issues). Further, the Service is advised that the Applicant, as well as other third parties acting on behalf of the COSA and the Applicant, have offered to acquire this property and/or a conservation easement thereon as recently as early May, 2004. The present owners have refused any such offer and have stated they have no interest in either developing or encumbering their property in any way, stating that they wish to keep their family ranch in its current condition for their family's private enjoyment in the future.

ENVIRONMENTAL ASSESSMENT

2.0 PURPOSE AND NEED FOR PROPOSED ACTION

The proposed action is the issuance of a Permit to authorize take of the GCWA in connection with the development, operation, and maintenance of Master Phase II as a master planned, mixed use community, including a golf-resort component. The action is needed to reduce the risk that such development might result in the otherwise prohibited take of the GCWA and to assure that the impacts of any such taking are, to the maximum extent practicable, minimized and mitigated. The purpose of this EA/HCP is to consider and evaluate the potential impacts of the project on the human environment and to provide the Applicant's "conservation plan", as required by the ESA. The proposed development of Master Phase II necessitates an evaluation of the environmental impacts of alternatives, and the no action alternative. The permit, if issued, would authorize incidental take for GCWAs associated with the development, operation, and maintenance of Master Phase II. This EA/HCP will establish the conditions under which LIC will meet the requirements for issuance of a section 10(a)(1)(B) permit under the ESA.

3.0 DESCRIPTION OF AFFECTED ENVIRONMENT

3.1 Vegetation

Vegetation within the Property can be described as generally associated with either drainages or uplands. The drainages are composed of ephemeral streambeds containing patches of Ashe juniper/live oak woodlands. The dominant tree species in the drainages include, but are not limited to: Ashe juniper, live oak (*Quercus virginiana* var. *fusiformis*), Texas Oak (*Q. texana*), cedar elm (*Ulmus crassifolia*), and Texas persimmon (*Diospyrus texana*). Based on consultant reports provided by the Applicant, as well as personal observations by Service personnel and

review of aerial photography, canopy cover varies considerably across the property, with some areas as high as 70 percent.

Some upland areas however, contain mostly shrub and grasslands with small patches of woodlands. These areas tend to have lower canopy cover than do the steeper drainages. The dominant tree species in the uplands include, but are not limited to: Ashe juniper (*J. ashei*), live oak (*Q. virginiana* var. *fusiformis*), cedar elm (*U. crassifolia*), honey mesquite (*Prosopis glandulosa*), acacia (*Acacia greggii*), and Texas persimmon (*D. texana*).

3.2 Wildlife

Based on the compilation of various observations and reports, wildlife within the project area is comprised mainly of common species of central Texas. Common mammals on the Property are expected to include opossum (*Didelphis virginiana*), armadillo (*Dasypus novemcinctus*), fox squirrel (*Sciurus niger*), Texas mouse (*Peromyscus attwateri*), raccoon (*Procyon lotor*), and white-tailed deer (*Odocoileus virginiana*). Common resident bird species include northern mockingbird (*Mimus polyglottos*), northern cardinal (*Cardinalis cardinalis*), Carolina chickadee (*Parus carolinensis*), tufted titmouse (*Parus bicolor*), mourning dove (*Zenaida macroura*), northern bobwhite (*Colinus virginianus*), western scrub jay (*Aphelocoma coerulescens*), rufous-crowned sparrow (*Aimophila ruficeps*), turkey vulture (*Cathartes aura*), and other common bird species. Common reptiles and amphibians in the area include the Gulf Coast toad (*Bufo valliceps*), Texas earless lizard (*Cophosaurus texanus*), ground skink (*Scincella lateralis*), Texas rat snake (*Elaphe obsoleta*), Texas patchnose snake (*Salvadora grahamiae*), and flathead snake (*Tantilla gracilis*). It is anticipated that population levels of wildlife species on the Property are similar to other ranchland across Bexar County and central Texas.

3.3 Threatened or Endangered Species

Presently there are eleven federally listed species that occur in Bexar County, two neotropical migratory songbirds and nine karst invertebrates. The eleven listed species include the following: GCWA, black-capped vireo (*Vireo atricapillus*) (BCVI), Helotes mold beetle (*Batrises venyivi*), Cokendolpher Cave harvestman (*Texella cokendolpheri*), Robber Baron Cave spider (*Cicurina baronia*), Madla's Cave meshweaver (*C. madla*), Government Canyon Bat Cave spider (*Neoleptoneta microps*), Government Canyon Bat Cave Meshweaver (*C. vespera*), Braken Bat Cave Meshweaver (*C. venii*), and two beetles (*Rhadine exilis* and *Rhadine infernalis*) that do not have common names.

In addition, another nine species listed as threatened, endangered, or candidate species reside in the San Marcos, Comal, Fern Bank, and Hueco springs and their associated aquatic ecosystems, and the San Antonio Segment of the Edwards (Balcones Fault Zone) Aquifer. Portions of the recharge, contributing, and artesian zones of this segment are included within Bexar County and certain activities occurring within these areas may or may not affect the quality and/or quantity of water within the Edwards Aquifer, and thereby may or may not affect these species. Seven of these species are endangered: Peck's cave amphipod (*Stygobromus pecki*), Comal Springs riffle beetle (*Heterelmis comalensis*), Comal Springs dryopid beetle (*Stygoparnus comalensis*), San Marcos gambusia (*Gambusia georgei*), fountain darter (*Etheostoma fonticola*), Texas blind salamander (*Typhlomolge rathbuni*), and Texas wild-rice (*Zizania texana*). The San Marcos

salamander (*Eurycea nana*) is listed as threatened. These eight species are referred to as “Edwards Aquifer Species.” The Cagle’s map turtle (*Graptemys caglei*), restricted almost exclusively to the Guadalupe and San Marcos Rivers, may also be influenced by flows from the Edwards Aquifer and is designated as a candidate species.

There is no evidence of any threatened or endangered species other than the GCWA occurring on or adjacent to the Property (see Sections 3.3.2 and 3.3.3).

3.3.1 Endangered Migratory Songbirds

Golden-cheeked warbler

The GCWA is a small neotropical migrant songbird that breeds only in the mixed Ashe juniper-deciduous woodlands of the Edwards Plateau, Lampasas Cut-Plain, and Llano Uplift regions of central Texas (USFWS 1992). GCWAs generally prefer moderate to high-density areas of mature, older trees containing dense foliage in the upper canopy. A mix of mature deciduous tree species among mature Ashe juniper is ideal for GCWA habitat. Typical GCWA habitat consists of tall, dense, mature stands of Ashe juniper (*J. ashei*), also called blueberry cedar, mixed with trees such as Texas oak (*Q. texana*), Lacey oak (*Q. glaucoides*), shin oak (*Q. havardii*), live oak (*Q. virginiana*), post oak (*Q. stellata*), Texas ash (*Fraxinus americana*), cedar elm (*U. crassifolia*), hackberry (*Celtis laevigata* var. *texana*), bigtooth maple (*Acer grandidentatum*), sycamore (*Platanus occidentalis*), Texas black walnut (*Juglans microcarpa*), escarpment cherry (*Prunus serotina* var. *eximia*), and pecan (*Carya illinoensis*). The GCWA requires the shredding bark of mature Ashe junipers (generally thirty years old and older) for nesting material and forages for insects in Ashe juniper and various deciduous tree species. Average nest height is 15 feet (4.57 meters) above ground, ranging from five (1.52 meters) to thirty-two feet (9.75 meters) above ground (USFWS publication, 1995, <http://arlingtontexas.fws.gov/pdf/GCWA.pdf>).

The areas most likely to be utilized by the GCWA consist of nearly continuous canopy cover of trees with 50 to 100 percent closed canopy (Campbell, 1995). Arnold et al. (1996) found that GCWAs do not consistently occupy and reproduce in patches of less than 56 acres (22.66 hectares). However, records exist of GCWAs occupying patches of habitat as small as 12 acres (4.86 hectares) (Campbell, 1995). These patches were consistently in association with larger nearby patches.

GCWAs arrive in central Texas in early March and stay through early August when they begin their migration south to the highland pine-oak woodlands of southern Mexico and northern Central America.

GCWA surveys have been conducted on portions of the Cibolo Canyon property at various times since 1995. As shown on Figure 4, these surveys have detected the presence of the GCWA across much of the Property. Surveys of GCWAs were conducted by Horizon in 1995, 1997, 1998, 1999, and 2004 on all or a portion of the Evans Road Tract portion of Master Phase II. In addition, in 2002 aci conducted a one-day GCWA census on the Master Phase II portion of the Evans Road Tract (aci, 2002b). In 2003 and 2004, aci conducted GCWA surveys on the North Triangle Tract. Finally, in 2004 Horizon conducted GCWA surveys on portions of the Wolverton Tract. All Horizon and aci survey reports and available field data have been reviewed by the

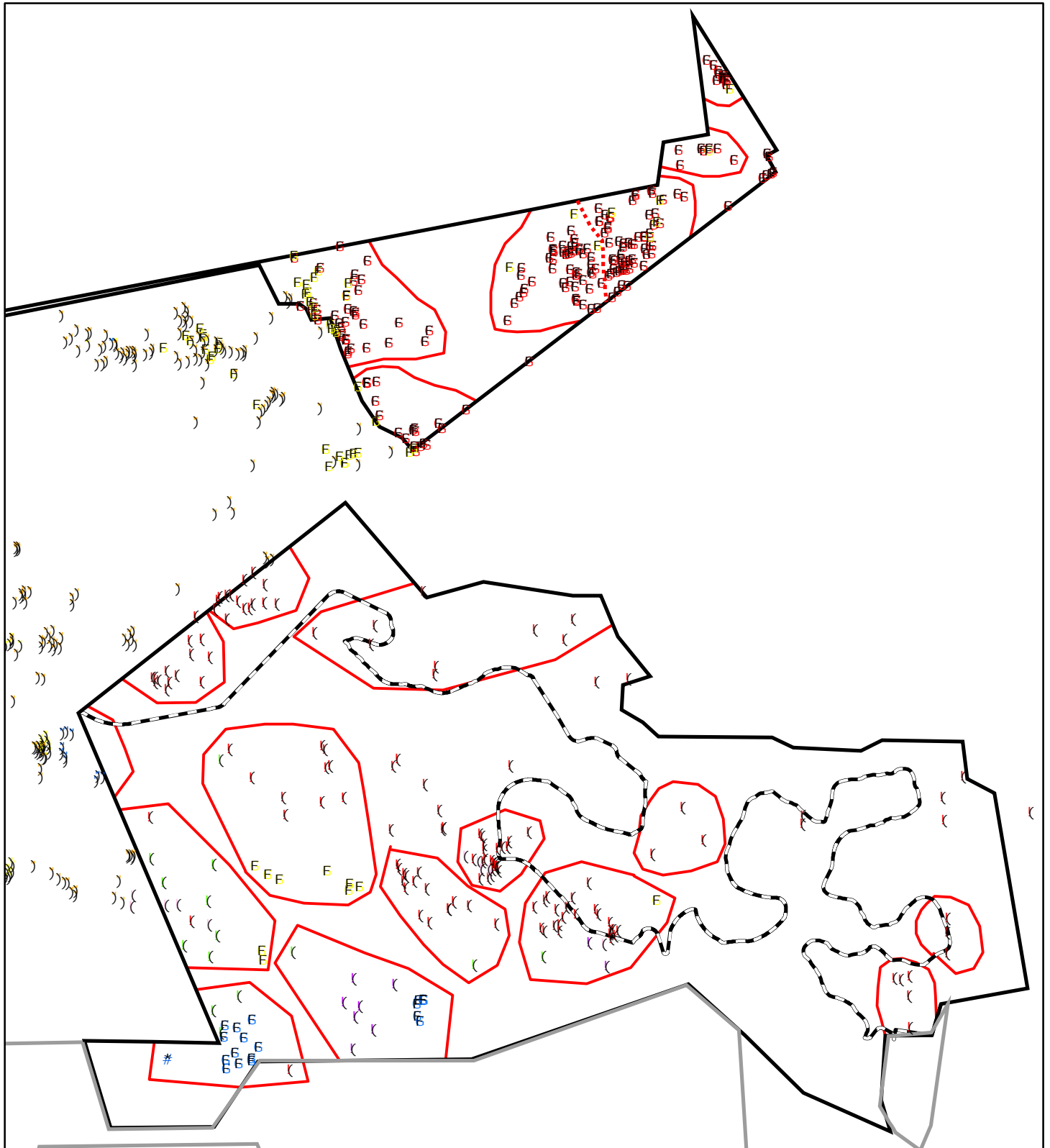


Figure 4. Cibolo Canyon GCWA survey information

- | | | | |
|---|--------------|-----|--------------------------------|
| (| 1997 Horizon | # | 2003 Service |
| (| 1998 Horizon | 6 | 2004 aci |
| (| 1999 Horizon | (| 2004 Horizon |
|) | 2001 SWCA | | cibolo canyon master phase 1 |
|) | 2002 SWCA | | cibolo canyon master phase 2 |
| E | 2002 aci | — | territories |
|) | 2003 SWCA | --- | Cibolo Canyon Dev Line |
| 6 | 2003 aci | ... | approximate territory boundary |

0 500 1,000 2,000 3,000 4,000 Feet

Service. Figure 4 is a map prepared by the Service depicting all GCWA observations from all of these survey efforts, with the observations coded both by year and observing party.

Black-capped vireo

Habitat evaluations conducted by Horizon and aci concluded that the vegetation of the Property lacks the requisite shrub density and shrub species regularly occupied by the BCVI (aci, 2002a). No impacts to the BCVI are expected as a result of the proposed development. The Applicant has not requested take coverage for the BCVI and none would be granted by issuance of this permit.

Critical Habitat

Critical habitat has not been designated for either GCWA or BCVI. Therefore, none will be impacted.

3.3.2 Karst Invertebrates

Nine endangered karst or cave-dwelling invertebrates are known to occur in Bexar County, Texas. These nine invertebrates are known from karst geologic features (limestone formations that contain caves, sinks, fractures, and fissures) in north and northwest Bexar County. These nine invertebrates are obligate karst or cave-dwelling species. Habitat required by the nine karst invertebrate species includes subterranean spaces in karst formations with stable temperatures, high humidity, and suitable substrates (for example, spaces between and underneath rocks suitable for foraging and sheltering), and a healthy surface community of native plants and animals that provide nutrient input and, in the case of native plants, act to buffer the karst ecosystem from adverse effects.

Six karst fauna regions have been delineated within Bexar County (Veni, 1994), including: Stone Oak, University of Texas at San Antonio, Helotes, Government Canyon, Culebra Anticline, and Alamo Heights. The Property is located in the Stone Oak karst fauna region whose extent is known to be inhabited by three of the nine Bexar County listed invertebrate species. The three species known to occur in Stone Oak karst fauna region and their abundances within the region are *R. exilis* (27 caves), *R. infernalis infernalis* (1 cave), and *C. madla* (1 cave). Master Phase II is not designated by the Service as Critical Habitat for any of the endangered karst invertebrates. Multiple karst surveys of the Master Phase II area have not revealed the presence of any endangered karst invertebrate habitat or species (Pape Dawson Engineers, Inc, 2003; Horizon Environmental Inc; 1999; Mike Warton and Associates, Inc., May, 2000; Mike Warton and Associates, May 2001; Mike Warton and Associates, May 2001; PBS&J, 2004) (see Section 3.5). Impacts to endangered karst invertebrates are not expected as a result of the proposed development. The Applicant has not requested take coverage for any karst invertebrate and none would be granted by issuance of the requested permit.

3.3.3 Edwards Aquifer Related Species

Over 40 species of highly adapted, aquatic, subterranean species are known to live in the Edwards Aquifer. These include amphipod crustaceans, gastropod snails, and vertebrates like blind catfish (Longley, 1986). Seven aquatic species are listed as endangered in the Edwards Aquifer system, one is listed as threatened, and one as a candidate species. The seven endangered species of the Edwards Aquifer system are the Texas blind Salamander (*T. rathbuni*), fountain darter (*E.*

fonticola), San Marcos gambusia (*G. georgei*), Texas wild-rice (*Z. texana*), Comal Springs riffle beetle (*H. comalensis*), Comal Springs dryopid beetle (*S. comalensis*), and Peck's cave amphipod (*S. pecki*). The threatened species is the San Marcos salamander (*E. nana*) and the candidate species is the Cagle's map turtle (*G. caglei*). Critical habitat has been designated for the fountain darter (*E. fonticola*), San Marcos gambusia (*G. georgei*), Texas wild-rice (*Z. texana*), and San Marcos salamander (*E. nana*). These four species are known only from the San Marcos River in San Marcos, Texas.

Most of Master Phase I and II (approximately 2,548 acres (1031.2 hectares)) are within the designated Edwards Aquifer Recharge Zone (see discussion in 3.7.2 concerning actual recharge characteristics). The remainder of the Property (approximately 307 acres) is within the Contributing Zone of the Edwards Aquifer. Stormwater runoff surface flows leaving the site have the probability of recharging the Edwards Aquifer.

3.4 Wetlands

The U.S. Army Corps of Engineers (USACE) defines wetlands as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (USACE 1987). A review of the National Wetlands Inventory for the Bulverde and Longhorn quadrangles did not result in locating any identified wetlands within Master Phase II. All waterways on site are ephemeral streams. No permanent water bodies are present on the Property. After reviewing the biological, archaeological, and geological information provided to them by LIC's technical design consulting team, on June 3, 2003, LIC received approval from the USACE for construction of a number of linear crossings of waters of the U.S. for construction of Cibolo Canyon Boulevard and installation of utilities in the Master Phase I area. Any crossings in the Master Phase II area will be handled in a similar manner.

3.5 Geology & Soils

According to the *Soil Survey – Bexar County, Texas* (USDA, 1991), Tarrant association, rolling (TaC), and Tarrant association, hilly (TaD) are two soil units present on site. The Tarrant series consists of stony soils that are very shallow, dark colored and gently undulating to steep. The soils consist of 5 to 12 inches (12.7 – 30.5 cm) of calcareous clay to clay loam containing many limestone fragments, overlying 7 to 12 inches (17.8 – 30.5 cm) of fractured limestone containing fine earth in interstices over fractured limestone. The permeability of Tarrant series soils is 1.0 to 1.5-in/hr (2.54 – 3.79 cm/hr). Tarrant soils are characterized by poor, practically impervious drainage and have moderate to no susceptibility to erosion (USDA, 1991).

Onsite geologic mapping indicates that Master Phase II is underlain by the Kainer Formation of the Edwards Group and the upper member of the Glen Rose Formation. The Property, with the exception of the majority of the North Triangle Tract, is within the Texas Commission on Environmental Quality (TCEQ) officially mapped area of the Edwards Aquifer Recharge Zone. The Kainer formation is approximately 310 feet (94.5 meters) thick. The lithology of the Kainer Formation includes marine sediments consisting of fossiliferous mudstones and wackestones that grade upward into dolomitic mudstones and evaporites, terminating at a miliolid grainstone (Stein and Ozuna, 1995).

The Kainer Formation (Kek) is divided into the grainstone member (Kekg), the kirschberg evaporite member (Kekk), the dolomitic member (Kekd), and the basal nodular member (Kekbn) (Stein and Ozuna, 1995). Pape-Dawson on-site geologic mapping and mapping by Stein and Ozuna (1995) indicate the Kekd is exposed over most of the site north of the Bat Cave Fault (see Figure 5). The Kekbn is exposed in valleys and the Kekk is exposed on some hilltops.

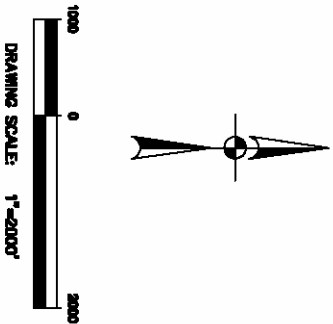
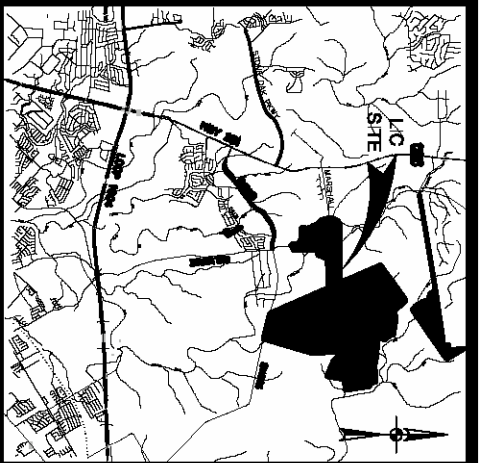
Pape-Dawson mapping in Bexar County has revealed that karst in the Kainer Formation is generally characterized by few, small sinkholes and caves formed as shafts. However, horizontal cave development also occurs. The Person Formation is generally characterized by large, broad, shallow sinkholes and lateral cave development, although vertical caves are not uncommon.

The upper member of the Glen Rose formation (Kgru) is a yellowish-tan, thinly bedded limestone and marl and is approximately 480 feet (146.3 meters) thick (Stein and Ozuna, 1995). Pape-Dawson on-site geologic mapping and mapping by Stein and Ozuna (1995) indicates the Kgru underlies the Kek and is exposed in deeply incised valleys on the Wolverton and North Triangle Tracts. Karst in the Kgru is generally characterized by lateral cave development with some vertical shafts.

The upper member of the Glen Rose Formation (Kgru) underlies the Edwards Group. Onsite water wells indicate that, with the possible exception of some areas in Master Phase I south of the Bat Cave Fault, the Edwards Group is not saturated on-site. Surface water infiltration passes down through the Edwards Group rock and recharges the underlying Upper Trinity Aquifer within the Kgru. Onsite geologic mapping by Pape-Dawson indicates some on-site springs discharge from perched water zones in the Kgru below the Edwards Group. These springs are identified on the TCEQ Edwards Aquifer Recharge Zone map of the Bulverde, Texas quadrangle.

Geologic mapping of the Evans Road Tract and 250 acres (101.2 hectares) of the Wolverton Tract, which includes Master Phase I and Master Phase II, has been conducted by Pape-Dawson Engineers, Inc. No geologic surveys or mapping have been completed for the north Triangle tract. However, under the proposed habitat conservation plan this area will be preserved and therefore no impacts are expected. These areas were studied as a whole and therefore are being summarized here in its entirety rather than based solely on the limits of Master Phase I or Master Phase II. During the review and evaluation of Master Phase I, a report entitled "Summary of Karst Feature Evaluation" dated June 2003 was submitted to the Service. In the July 3, 2003 response letter, the Service concurred based on the Karst Feature Evaluation that there is no information that indicates that the karst invertebrates are present on Master Phase I. Since the supporting documentation also addressed Master Phase II, a brief summary of the information is included herein.

Field methods utilized to identify and evaluate potential karst features were intended to meet both the Service draft protocols (Versions May 8, 2000; April 8, 2001; and May 23, 2001) for identifying karst features and the TCEQ criteria for Geologic Assessments on the Edwards Aquifer Recharge Zone. A total of 330 geologic features were mapped, which included 142 non-karst features such as fault zones, fractured rock outcrops, stream scours, and water wells. One-hundred-eighty-one (181) geologic features and ninety-nine (99) non-karst features were located within Master Phase I, and one-hundred-forty-nine (149) geologic features and forty-three (43)



LOCATION MAP
 NOT TO SCALE

FIGURE 5

CIBOLO CANYON PROPERTY
 LOCATION OF BAT CAVE FAULT

non-karst features were located within the Property. The investigations revealed the presence of 188 possible karst features on site. Excavation of 185 of these possible karst features revealed that the features rapidly constricted, had well developed soil horizons with compact clay at depth or exhibited no airflow. No habitat suitable for karst invertebrates was encountered at any of these 185 features.

In accordance with the above-referenced protocols and methodology, excavation was performed by hand until encountering a cave, solid bedrock with no portals, packed clay with no airflow present, potential archaeological or paleological materials, or where continued excavation would be dangerous. No mechanical equipment was used. One of the three remaining karst features is an open cave known as Elm Waterhole Cave (located within Master Phase I). The two remaining features were excavated into voids large enough to enter. One of the features is 'cave-sized' and was named Stein Cave and is located within the Property. The other feature is smaller than a cave and was called Peanut Sink and is located within Master Phase I.

Biological karst invertebrate collections performed by Warton & Associates did not reveal the presence of any endangered species in any of the three features entered. All other identified karst features were determined to not provide suitable habitat for federally listed species and were therefore not surveyed. A summary of investigations and a report of findings were included in the Karst Feature Summary previously evaluated by the Service. Summary details regarding Stein Cave, the karst feature located within the Property, are included herein and taken from the Karst Feature Summary.

As described in detail in the Karst Feature Summary, Stein Cave was originally identified as a 6.0 foot (1.83 meters) diameter sinkhole at the base of a large mature oak tree. Removal of undergrowth and surface materials revealed a bedrock level and a vertical solutioned rock joint opening of approximately 3 feet (.915 meters) long by 15 inches (38.1 cm) wide. The initial infilling was composed of dark gray clay soil mixed with a profusion of tree roots. Gradually the solid solutioned walls of a vertical shaft began to become exposed, and at approximately 3 feet (.915 meters) down on the north end of the joint, a drainage portal that issued cool air-flow conductivity was revealed. Further excavations indicated that at approximately the 10.5-foot (3.2 meters) depth, the flooring sloped off to the southeast to a solid wall and a low partially open bedding plane space. The bedding plane room measured 30 feet (9.15 meters) long by 15 feet (4.57 meters) wide with a long valleyed trough in the floor. No drain portals of any kind were present and semi-clay covered areas are evidence that very little water (if any) moves across it. No other extents were found. The bedding room was found to be completely void of any life forms.

3.6 Land Use

Current land use on the Property consists of ranchland, livestock grazing, and seasonal hunting along with management for conservation and preservation of not only game and non-game species, but for species of concern in the area as well.

Master Phase II lies within the northern portion of Bexar County in the extraterritorial jurisdiction of COSA and is largely surrounded by existing developments. Some of these existing developments are currently built out, while others are actively under construction or nearing

initial ground-breaking. These developments include Clear Springs Park, which borders the Property to the north, and Encino Park and Sendero Ranch to the west and northwest. Also, immediately to the northwest is the Indian Springs property, which is a major, small lot subdivision that is presently under construction. Fossil Creek and Fossil Ridge are existing subdivisions to the south and southwest. Century Oaks Golf Community is to the east, as are other large-lot and so-called "ranchette" properties to the southeast. Several other large ranchette properties are located along the border of the Property to the east and northeast.

3.7 Water Resources and Water Quality

3.7.1 Surface Water

No perennial streams or water bodies are located on site (USGS Bulverde Quadrangle Map). Surface water flow occurs only briefly during and after rainfall events. The West Fork of Cibolo Creek and Cibolo Creek border the eastern side of the Wolverton Tract. Runoff from the North Triangle and Wolverton Tract culminate in Cibolo Creek. Runoff from the Evans Road portion of the Property enters an unnamed tributary to Elm Waterhole Creek. No permanent water bodies are present on the Property.

No surface water quality problems are known to exist on-site. The closest receiving water on the State of Texas 1999 Clean Water Act Section 303(d) list is approximately 6.5 miles (10.46 km) downstream of the site. The Mid Cibolo Creek and Upper San Antonio River stream segments will receive water downstream of the site and are on the 303(d) list. These segments are on the list due to low dissolved oxygen concentration (Mid Cibolo) and bacteria levels exceeding criterion established to assure the safety of contact recreation (Upper San Antonio).

3.7.2 Groundwater

Six water wells have been drilled on-site and completed with draw from the Middle Trinity Aquifer. The water quality produced is generally good, but exhibits a hydrogen sulfide odor when initially exposed to air and has fluoride concentrations slightly in excess of primary drinking water standards in some wells.

Figure 6 is a cross section of the subject property showing stratigraphic and hydrogeologic units and the groundwater levels measured in water wells drilled onsite. Based on geophysical logs of water wells drilled on-site by Pape-Dawson, groundwater depth varies at the Property but is generally at least 150 feet (45.7 meters) deep. The first water bearing unit is the upper member of the Glen Rose Formation or Upper Trinity Aquifer. The deeper lower member of the Glen Rose Formation and Cow Creek Limestone make up the Middle Trinity Aquifer. Deeper yet are the Sligo and Hosston Members of the Travis Peak Formation that make up the Lower Trinity Aquifer (Ashworth, 1983). No water bearing Edwards Aquifer unit exists within the Property because the Edwards Group rocks exposed at the ground surface are not saturated. Therefore, water that infiltrates on-site recharges the Upper Trinity Aquifer, not the Edwards Aquifer.

Groundwater recharge occurs primarily in streambeds (Metcalf and Eddy, 1979). Preservation of open space, floodplains, creek buffers, and sensitive geologic features within these areas will prevent significant losses of recharge to the Upper Trinity Aquifer. Studies have been conducted



A horizontal scale bar with markings at 0, 1000, and 2000 feet. The text "HORIZONTAL SCALE IN FEET" is written below the bar.

that identify evidence that some groundwater movement from the Upper and Middle Trinity Aquifer to the Edwards Aquifer occurs in some areas across faults (George, 1947, 1952; Small, 1986; Veni, 1997; Edwards Underground Water District Report 95-03 (hereafter referred to as EUWD Report 95-03)). Movement of some groundwater from the upper member of the Glen Rose Formation to the Kainer Formation of the Edwards Group may or may not occur across the Bat Cave Fault. The location of the fault as mapped by Pape-Dawson and Stein and Ozuna (1995) is presented on Figure 5. Recharge from the Glen Rose Formation to the Edwards Aquifer within the entire San Antonio Segment of the Edwards Aquifer is estimated to be probably less than 2 percent of the total recharge (EUWD Report 95-03). The EUWD Report 95-03 references cross sections by Small (1986) through the Edwards Aquifer Recharge Zone (EARZ) that show areas in which faulting juxtaposes the Glen Rose Formation of the Trinity Aquifer and Edwards Group in the subsurface. These cross sections, water levels, and aquifer transmissivities were used to estimate the volume of flow across faults from the Glen Rose Formation to the Edwards Aquifer. A six-mile (9.65 km) length of faulting in the area of the Property was estimated to transfer between 97 and 351 acre-feet of water per year from the Glen Rose to the Edwards (EUWD Report 95-03). Total recharge from surface water to the San Antonio segment of the Edwards Aquifer is approximately 794,070 acre-feet averaged over the last 10 years. This means that an equivalent of approximately 0.01 percent to 0.04 percent of total recharge in the San Antonio segment of the Edwards Aquifer might occur from the Glen Rose Formation of the Trinity Aquifer to the Edwards Aquifer in the area of Bexar County, within which the Property is located.

However, a recent detailed investigation conducted by SAWS on the “bad-water” line of the Trinity Aquifer suggests that faults between the Trinity Aquifer and Edwards Aquifer may be barriers to flow in Bexar County and in the area of the site. Mr. Alvin Schultz, consultant for SAWS, presented data at the November 12, 2003 meeting of the South Texas Geologic Society that indicate there is an approximately 40-foot (12.2 meters) difference in the potentiometric groundwater levels between the Trinity Aquifer and Edwards Aquifer in the vicinity of the Property. This difference in water levels was interpreted by Mr. Schultz as a possible indication that faults between the aquifers are barriers to flow. Mr. Schultz’s detailed investigation also indicated that if groundwater flow from the Trinity Aquifer to the Edwards Aquifer was occurring, the water transferred was naturally-occurring, poor quality water with elevated concentrations of dissolved solids and sulfates.

3.8 Air Quality

The Metropolitan Planning Organization (MPO) addresses the expected impacts of increased population and transportation needs on Bexar County’s air quality. At the time of the study, the San-Antonio Bexar County area was considered by TCEQ as being in “near non-attainment” with the National Ambient Air Quality Standards (NAAQS). To date, San Antonio still holds near non-attainment status for ground-level ozone. Although San Antonio is in compliance with the one-hour ozone standard, it exceeds the eight-hour standard (TCEQ 2004). A Clean Air Plan for the San Antonio Metropolitan Statistical Area was prepared by the Air Improvement Resources Committee (AIRC) of the Alamo Area Council of Governments. The Plan is designed to enable a local approach to ozone attainment and to encourage early emission reductions that will help keep the San Antonio area in attainment of the 1-hour ozone NAAQS and ensure attainment of the 8-hour ozone NAAQS. The Clean Air Plan also incorporates the Early Action Compact for the San

Antonio area. The Early Action Compact protocol was endorsed by Environmental Protection Agency (EPA) Region 6 on June 19, 2002, and is designed to develop and implement control strategies, account for growth, and achieve and maintain the 8-hour ozone standard (AIRC 2002). Attainment with the 8-hour ozone standard is scheduled no later than December 31, 2007. Non-attainment designation will be deferred as long as all milestones and commitments are met. The Cibolo Canyon Property is located in an area of projected growth by MPO and would be subject to all standards of the EPA and the Early Action Compact.

3.9 Cultural Resources

In 2003, LIC's archaeological consultants conducted a cultural resources investigation and survey of the entire Cibolo Canyon Property. The archeological team was lead by principal investigator Sean R. Nash, Registered Professional Archaeologist of Archaeological and Cultural Sciences Group. A records search was conducted at the Texas Archeological Research Laboratory and the Texas Historical Commission's Texas Archeological Sites Atlas to locate any previously recorded historic and prehistoric cultural resources within the project area. Previous to the 2003 archaeological survey, there were no recorded archaeological sites within the Cibolo Canyon Property. The 2003 cultural resources survey efforts discovered fourteen archaeological sites within Master Phase I and eleven archaeological sites within Master Phase II. None of the newly recorded sites are eligible for nomination as a State Archeological Landmark or to the National Register of Historic Places. The full text of the report (2003) is on file with the Service (Austin Ecological Services Field Office).

Sites 41BX1547, 41BX1548, and 41BX1549 are located within the easternmost portion of the Wolverton Tract.

Site 41BX1547 is a lithic scatter located on an upland knoll overlooking the Cibolo Creek flood plain. The lithic scatter covers approximately 11 acres (4.45 hectares). However, the artifact density varies with elevation. The bulk of the artifacts are located along limestone shelves exposed on the slope of the knoll. The artifact scatter extends around the perimeter of the knoll at approximately the same elevation. Between the shelves, the scatter dissipates.

The knoll is heavily eroded. Limestone outcrops are common, and soils are thin to non-existent. Large limestone fragments, some boulder size, are numerous on the surface. A recently cut road encircles the knoll. This road marks the lowest extent (i.e., elevation) of the scatter.

Artifacts observed at the site include crude bifaces/preforms, crude unifaces, chert cores, primary flakes, secondary flakes, and a few tertiary flakes. One diagnostic artifact, an Early Archaic Guadalupe tool, was collected from the surface. No projectile points or cultural features were observed.

The site appears to be a lithic procurement/lithic reduction site. The presence of crude bifaces/preforms, primary and secondary flakes, and chert cores suggest early-stage lithic reduction. However, cultural deposits are surficial and are mixed and resting on the surface, so separating discrete occupations is improbable.

The cultural deposits have been heavily disturbed by erosion and land clearing activities associated with the cut road. The site has very little research value and does not warrant further investigation.

Site 41BX1548 is located on an upland knoll immediately west of site 41BX1547. The site consists of a lithic scatter that covers approximately 13 acres (5.26 hectares). Like site 41BX1547, the artifact density varies with elevation.

The knoll is heavily eroded. Soils are thin to non-existent, and limestone outcrops are common. Large limestone fragments, some boulder size, are numerous on the surface. The knoll has been heavily disturbed by land clearing activities. A cut road and several bulldozer paths cross the knoll. Recent clearings and associated bulldozer push piles were observed throughout the site.

Artifacts observed at the site include crude bifaces/preforms, crude unifaces, chert cores, primary flakes, secondary flakes, and a few tertiary flakes. No diagnostic artifacts or cultural features were observed.

The site appears to be a lithic procurement/lithic reduction site. The presence of crude bifaces/preforms, primary and secondary flakes, and chert cores suggest early-stage lithic reduction. No cultural features or diagnostic artifacts were observed. The site has been heavily disturbed by erosion and land clearing activities, and cultural deposits are surficial with components mixed and resting on the surface. Separating discrete occupations is improbable. Because the site is heavily disturbed and surficial and lacks diagnostic artifacts, it has very little research value and does not warrant further investigation.

Site 41BX1549 is located on an upland knoll immediately south of site 41BX1548. The site measures approximately 200 meters in diameter and consists of a sparse lithic scatter. Much of the site has been disturbed by land clearing activities and ranch road construction. The area also appears to be frequently used for hunting. A hunters' camp is located at the eastern boundary of the site, and a ranch road cuts through the western portion of the site.

Cultural materials include bifaces, biface thinning flakes, chert debitage, tertiary flakes, and one projectile point. The projectile point is very similar to a Gary preform, and may suggest a Middle Archaic occupation. However, because no other diagnostic artifacts were found and the cultural deposits are mixed and resting on the surface, separating discrete components is highly improbable. No cultural features were observed.

The site is a sparse, surficial lithic scatter that has been disturbed by erosion, ranch road construction, and land clearing activities. Modern hunting and camping activities have also disturbed a portion of the site. Only one possible diagnostic was found during the pedestrian survey. It is a Gary-like projectile point preform that could date to the Middle Archaic period. No other diagnostics were found. It is possible that the site has been surface collected by hunters and campers, due to the close proximity of modern fire rings and hunting blinds. The site is also heavily eroded. Bedrock is exposed over much of the site, and the soils are thin to non-existent. Many of the artifacts have likely been displaced by sheet wash. Because of the disturbed, surficial nature of the cultural deposits, separating discrete components is unlikely. The site has very little research value and does not warrant further investigation.

Sites 41BX1553, 41BX1554, 41BX1559, 41BX1568, and 41BX1569 are located within the Evans Road Tract.

Site 41BX1553 is a sparse lithic scatter located in a ridge top clearing in the northernmost portion of the Evans Road Tract. The site is approximately 100 m (northeast-southwest) x 200 m (northwest-southeast) and is strictly surficial (i.e., bedrock is exposed over the majority of the surface).

Cultural materials include chert debitage, chert cores, and crude bifaces. No diagnostic artifacts or cultural features were observed.

Based on the presence of chert cores and crude bifaces, the site may be an early-stage lithic reduction/tool manufacturing site. However, the site is heavily deflated and lacks diagnostic artifacts or cultural features. The cultural deposits are sparse and surficial and have been heavily eroded by sheet wash. Due to disturbances and lack of diagnostics, the site has very little research value and does not warrant further investigation.

Site 41BX1554 is a sparse, surficial lithic scatter located at the head of a draw that feeds West Fork Creek. The site is approximately 10 m (northwest-southeast) x 30 m (northeast-southwest) and is strictly surficial (i.e., bedrock is exposed over the majority of the surface). The cultural materials are confined to a shallow wash, which is bounded by thick cedar breaks.

Cultural materials include chert debitage, bifaces, and an unidentified projectile point. The projectile point has a bifurcated stem and is similar to Archaic-period projectile points. However, it has not been formally typed. The cultural deposits are surficial and highly disturbed. For this reason, the site has very little research value and does not warrant further investigation.

Site 41BX1559 is a surficial lithic scatter located on an upland ridge in the westernmost portion of the Evans Road Tract, in the "duck neck" portion of the Cibolo Canyon Property. The site measures approximately 100 m (N-S) x 200 m (E-W) and is bounded by an east-west oriented barbed wire fence to the south. Soils at the site are thin to non-existent, and numerous bedrock outcrops and large limestone fragments are common on the surface. Limestone shelves are exposed along the ridge slopes.

Cultural materials include 2 bifaces, 1 utilized/modified flake, and numerous pieces of chert debitage. No diagnostic artifacts or cultural features were observed. A random 1-x-1-m collection square contained 10 chert flakes and 2 bifaces (one is crude, and one is finely flaked). No shovel tests were executed due to the thin soils and exposed bedrock.

The site is a heavily deflated, surficial scatter of chert flakes and bifaces. The site has little to no depth, and the artifact distribution is sparse. No diagnostic artifacts or cultural features were observed. The site has very little research value and does not warrant further investigation.

Site 41BX1568 is located approximately 450 m west of site 41BX1553 on the same ridge. A ranch road cuts through the southern portion of the site. The site measures approximately 10 m (northwest-southeast) x 20 m (northeast-southwest) and is located entirely within an upland wash.

Artifacts include an unidentified projectile point, a biface fragment, a Guadalupe tool, and several chert flakes. The Guadalupe tool suggests an Early Archaic occupation. One shovel test was executed at the site to characterize the subsurface deposits. The shovel test contained no artifacts. The surficial and heavily eroded nature of the cultural deposits makes separating discrete components highly unlikely.

The site is a sparse, surficial lithic scatter located entirely within an upland wash. The site has been heavily eroded by slope wash and contains few diagnostics. No cultural features were observed. The site has very little research value and does not warrant further investigation.

Site 41BX1569 is a small lithic scatter located on an upland ridge at the northern boundary of the Evans Road Tract, approximately 326 m north of site 41BX1568. An east-west oriented fence row marks the northern boundary of the site. The scatter measures approximately 40 m in diameter and is strictly surficial. Soils at the site are thin to non-existent. Cobble to boulder-size limestone fragments cover the surface, and bedrock outcrops are common. The surface is heavily deflated. Slope wash has scoured portions of the site to bedrock, and limestone shelves are exposed along the ridge slopes.

Cultural materials include several chert flakes and a biface. No diagnostic artifacts or cultural features were observed. Because of the surficial nature of the site, no shovel tests were conducted.

The site has been disturbed by slope wash and contains no diagnostic artifacts. No cultural features were observed. Due to the disturbances, surficial nature of the artifacts, and the lack of diagnostic artifacts, the site has very little research value and does not warrant further investigation.

Sites 41BX1561, 41BX1565, and 41BX1566 are located within the North Triangle Tract.

Site 41BX1561 is located on an upland ridge near the center of the tract. The site measures approximately 10 m in diameter and consists of a sparse, surficial scatter of chert flakes and bifaces. Land clearing, ranch road construction, and erosion have significantly disturbed the site. No diagnostic artifacts or cultural features were observed. Because of the disturbances, the surficial nature of the cultural deposits, and the lack of diagnostic artifacts, the site has very little research value and does not warrant further investigation.

Site 41BX1565 is a sparse lithic scatter located on the south bank of Clear Springs Fork Creek, immediately west of the confluence of Clear Springs Fork Creek and an unnamed tributary. The scatter is approximately 100 m wide and extends for approximately 300 m along the Clear Springs Fork Creek channel. A ranch road bisects the site.

Soils at the site are thin to nonexistent with many areas containing exposed bedrock. The creek valley has been heavily disturbed by land clearing activities, ranch road construction, and brush fires. Some portions of the site have been scraped to bedrock.

The scatter is concentrated in a thin wooded strip along the south bank of the creek. Several chert flakes and a few fire-cracked limestone rocks were observed adjacent to the creek channel and

ranch road. A Darl projectile point and possible Angostura projectile point basal fragment were collected near the creek, west of the ranch road. The projectile point and point fragment suggest Early and Late Archaic occupations. A biface medial fragment and several chert flakes were also observed at the eastern edge of the site, east of the main ranch road.

Three shovel tests were executed at the site to characterize the subsurface deposits. One of these shovel tests contained three chert flakes at 0-20 centimeters below surface (cmbs). At 20 cmbs, degrading bedrock was exposed. The remaining shovel tests contained no artifacts. Degrading bedrock was exposed at approximately 18-20 cmbs in the negative shovel tests. The site was carefully searched for cultural features, but none were found. The cultural deposits at the site are surficial and have been highly disturbed by land clearing and ranch road construction. For this reason, the site has very little research value and does not warrant further investigation.

Site 41BX1566 is a small lithic scatter located on a rock terrace on the north bank of Clear Springs Fork Creek. The scatter is approximately 50 m in diameter and is located directly across the creek from site 41BX1565. The site has been heavily disturbed by land clearing activities and brush burning. Numerous bulldozer push piles and recently burned brush piles were observed along the terrace. The soils at the site are thin to non-existent. Many areas have also been scraped to bedrock. The terrace is outside the limits of creek deposition, so no alluvial deposits were encountered. The majority of the sediments appear to be colluvial.

Cultural Materials include chert cores, debitage, biface fragments, crude bifaces, utilized/modified flakes, burned rocks, and one projectile point preform. The majority of the artifacts were found associated with recently burned bush piles. No diagnostic artifacts were found, and no cultural features were observed.

Two shovel tests were executed at the site. One shovel test contained 2 flakes at 0-20 cmbs and 3 burned rocks and one burned flake at 20-38 cmbs. However, degrading bedrock fragments were exposed at 17 cmbs. The second shovel test contained 1 small flake at 0-17 cmbs. Degrading bedrock was encountered at 17 cmbs. Both shovel tests contain highly disturbed, mixed materials. No intact cultural strata were encountered. Because of the disturbances and sparse nature of the site, it has very little research value and does not warrant further investigation.

3.10 Socioeconomic Environment

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, mandates that federal agencies identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of programs on minority or low-income populations. Current development near the Property consists of middle to upper middle-class homes. No minority or low-income individuals are present on the Property, nor would any minority or low-income individuals be displaced or disadvantaged by the proposed development.

In 2000, the greater San Antonio area, which includes the extra-territorial jurisdiction, grew at an annual rate of 2.24 percent; 2001 population numbers for the area were 1.64 million, up from 1.3 million in 1990. Bexar County, in which the Property lies, had steady growth in the 1990s in the range of 1.2 percent to 2.3 percent per year; 2001 population in the county (outside San Antonio

city limits) was 1.46 million, up more than 25 percent since 1990, when the population was 1.16 million (City of San Antonio Planning Department).

Military, service, telecommunications, trade, tourism, and construction are the primary employment sectors according to the COSA Planning Department. Primary employers in the greater San Antonio area include USAA, HEB grocery stores, SBC Communications, West Telemarketing, and military. Unemployment in 2003 stood at 4.8 percent in the greater San Antonio area. Residential real estate trends paralleled growth and employment statistics with a median home price of \$90,400 in 1999.

4.0 ALTERNATIVES CONSIDERED FOR THE PROPERTY

With the exception of the “No Action” Alternative, common elements run through consideration of alternative plans. These common elements include the following:

- Cibolo Canyon Blvd. is part of the regional transportation plan for this region of Bexar County and all plans seek to accommodate its routing through the Property;
- City Public Service, the municipally-owned San Antonio electric and gas utility, plans an electric transmission line along the east boundary of the site, including a substation site as shown on various figures;
- Major access will be provided from Evans Road on the south and from Bulverde Road on the west;
- Although Master Phase I is not included in the HCP, the plan for development of which is largely independent of Master Phase II, Phase I impacts will be addressed in the indirect and cumulative impacts sections of the EA.

Pursuant to ESA section 10(a)(2)(iii), following is a description of “what alternative actions to such taking the Applicant considered and the reasons why such alternatives are not being utilized.”

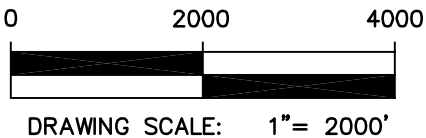
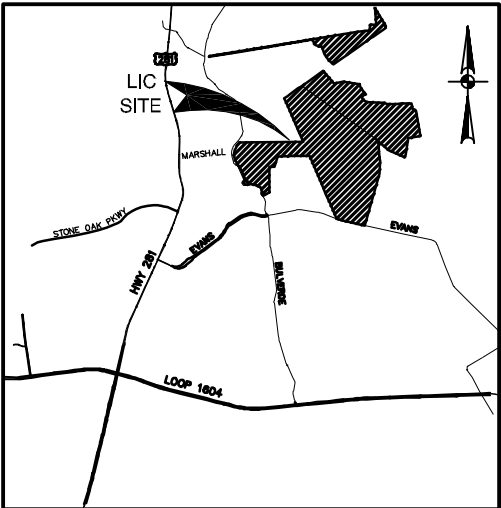
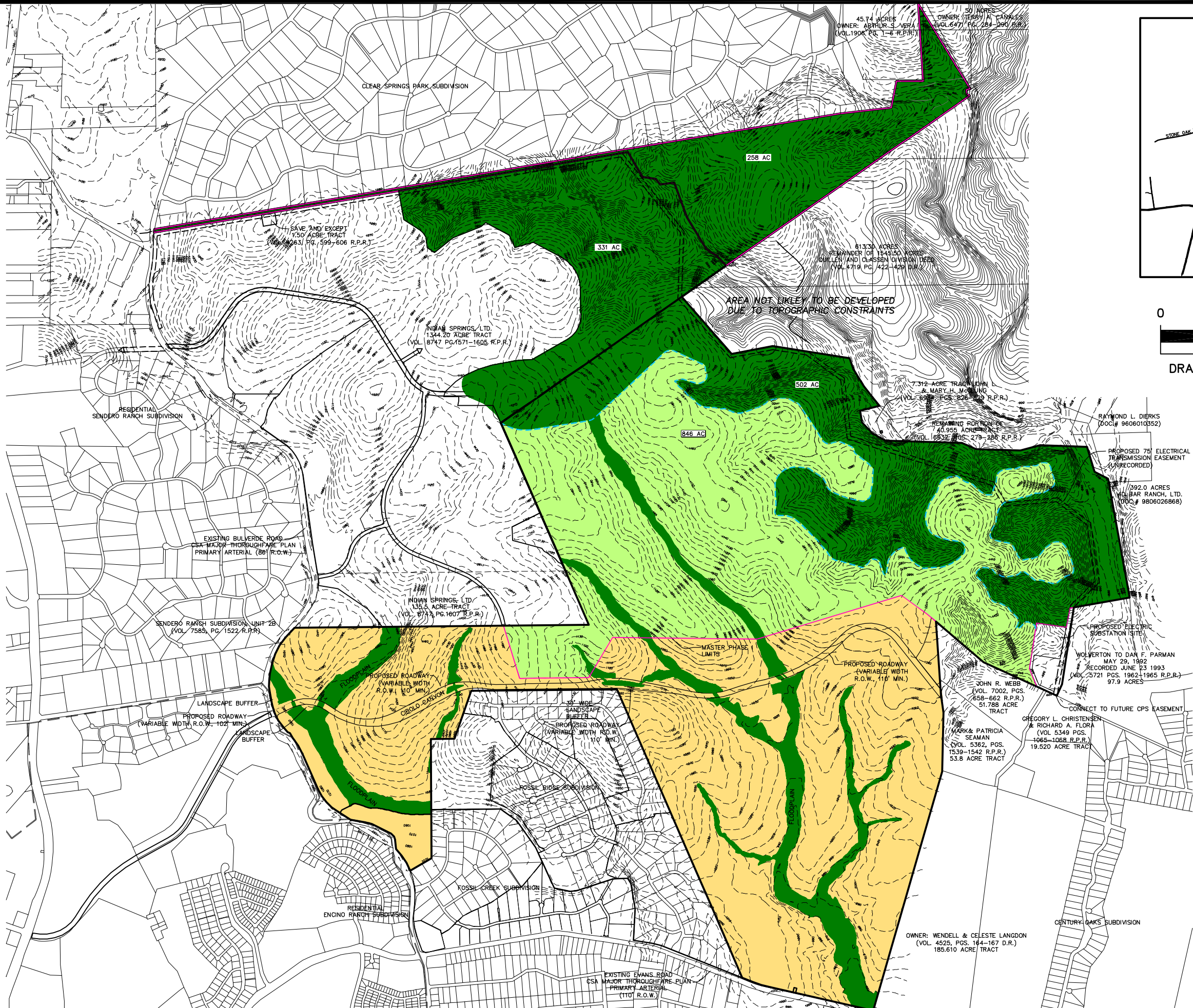
4.1 Alternative One – Proposed Alternative: Mixed use residential and commercial community with Golf Village, with On-site and North Triangle as Mitigation Land

The Proposed Alternative (preferred alternative) is the issuance of a permit under section 10(a)(1)(B) of the ESA to authorize the incidental take of the GCWA during the development, construction, and occupation of Master Phase II, as described below. The proposal for the use of the Property, as shown on preliminary master plan in Figure 7, is to construct a residential mixed-use community with a golf-resort component. Impervious cover will be 15 percent or less. In the Property, all development would occur within an envelope containing approximately 846 acres (342.4 hectares) (“Development Area”), and an additional 760 (307.6 hectares) acres will be preserved in perpetuity for conservation of the GCWA (“Conservation Area”).

Of the above totals, the Property will include 260 acres (105.2 hectares) of single family residential development of which approximately 40 acres (16.2 hectares) are planned to be homes on small lots and 220 acres are planned to be larger ‘estate-type’ lots with the residential total

Date: May 11, 2005, 4:56pm User: ID: MWright
File: H:\3538\00\Environment\EA_HCP\050511_FINAL FIGURES\FIGURE 7.dwg

THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. RELY ONLY ON FINAL HARD COPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL.



- PRESERVE
- DEVELOPMENT - MASTER PHASE II
- DEVELOPMENT - MASTER PHASE I
- LIMITS OF CONSTRUCTION ACTIVITIES
- LIMITS OF 10(A) PERMIT

FIGURE 7

REVISIONS:

PAPE-DAWSON ENGINEERS

555 EAST RAMSEY | SAN ANTONIO TEXAS 78216 | PHONE: 210.375.0000 FAX: 210.375.0010

INDIAN SPRINGS/CIBOLO CANYON
OPEN SPACE/PRESERVE
EXHIBIT

JOB NO.	3538-00
DATE	JUNE 2004
DESIGNER	TM
CHECKED	ooo DRAWN KLV
SHEET	1 OF 1

likely not exceeding 500 lots in the aggregate. There will be approximately 550 acres (222.6 hectares) dedicated to golf, resort and related uses which will include 21 golf holes, 45 acres (18.2 hectares) for the hotel and clubhouse complex, and 40 acres (16.2 hectares) of high intensity residential uses such as townhomes, condos, vacation timeshare units, or patio homes. The balance of the Property, approximately 800 acres (323.8 hectares), will be open space, floodplain, and connecting roads.

Current development concepts for the entire property, which are approximate with final numbers subject to change, include:

- A golf village destination resort community with,
- one or two resort hotels,
- two or three golf courses (21 holes in Master Phase II, the balance on Master Phase I),
- a golf practice playing area in Master Phase II,
- housing to supplement resort hotel accommodations for longer rental, (e. g. bungalows, casitas. and 'time-shared' lodge-type facilities in Master Phase II),
- conventional neighborhoods with a range of home offerings of approximately 2,500 single-family residences (500 in Master Phase II, 2000 in Master Phase I),
- local office and local retail (most of which are in Master Phase I),
- low density apartments with a total of approximately 1,000 units (500 units in Master Phase II and 500 units in Master Phase I),
- roadways and landscape buffers,
- open and green space including flood plain and creek buffers,
- and associated infrastructure.

The Applicant has advised the Service that the Proposed Alternative is the result of extensive planning work and reiterative processes conducted by and among geologists, ornithologists, and biologists; golf course designers; environmental professionals; engineers; community and home builders of new neighborhoods in this area; local, state, and federal officials and regulators; as well as many neighborhood groups and special interest groups in the San Antonio area. The Proposed Alternative has been shaped by concerns for balancing the needs of the community for more open space in an urbanized environment, the needs of area wildlife, the needs of local and future San Antonio residents for new housing and recreational opportunities, and the need of the Applicant for a reasonable return on an investment.

Included as part of the Proposed Alternative, the Applicant has voluntarily made the 'Golf Village' configuration subject to various San Antonio regulations. This commitment is documented in the "Amended and Restated Agreement for Services In-Lieu of Annexation" among the COSA and LIC dated January 28, 2005, which has been provided to the Service. The COSA Agreement applies exclusively to the construction and operation of the PGA Tour's Tournament Players Course San Antonio Golf Village, and so would not take effect in the event the Tournament Players Course San Antonio Golf Village were eliminated from the community plan. The Proposed Alternative is intended to encompass the anticipated areas of development with a golf village as one of the components. The COSA Amended and Restated Agreement for Services In-Lieu of Annexation includes the following significant conditions that are above and

beyond existing development requirements and regulations that the Applicant would be required to follow:

- ♦ a major reduction of impervious cover to 15 percent or less, reduced from an allowed 80 percent or greater;
- ♦ dedication of conservation easements on approximately 760 acres of public green space (in Master Phase I and II), space that would otherwise be unavailable to wildlife or the community as a whole;
- ♦ in addition to the 760 acres in conservation easements, a minimum of 500 acres of golf course and open space must be provided for a total of some 1,200 acres (485.6 hectares);
- ♦ voluntary compliance with City regulations concerning preservation of significant trees, water quality, and other development regulations in current usage;
- ♦ preservation of the 100-year floodplain over the entire property and use of graduated widths of naturally vegetated buffer zones between golf course(s) and surface water areas and areas with environmentally-sensitive features;
- ♦ a prohibition on the installation of underground storage tank systems;
- ♦ severe limitations on the installation of aboveground storage tank systems above those that are standard requirements of the TCEQ;
- ♦ restrictions and limitations on the use of private on-site sewage facilities;
- ♦ formation of an independent Geologic Arbitration Committee under the direction of the COSA and SAWS, the first of its kind ever to be used in the San Antonio region, to conduct a review of features ranked as "possible-sensitive" features under the TCEQ guidelines and to determine whether the features were actually sensitive or not and to recommend protection of these features before, during, and after construction, and to serve as an on-going committee to review geologic features encountered during construction;
- ♦ buffering and protection of sensitive geologic features otherwise not required to be preserved and protected;
- ♦ a prohibition on the storage of fuels on the Property for construction of non-golf course related improvements and a limited storage of up to five (5) gallons (18.9 liters) of fuels during the construction on golf course related improvements, whereas under current standards, up to 250 gallons of fuels may be stored without being regulated and up to 500 gallons may be stored if subject to TCEQ regulations; and
- ♦ a payment to SAWS annually in the sum of \$100,000 for the term of the COSA Agreement for water quality monitoring to be performed by SAWS.

In addition, the PGA Tour's Tournament Players Course courses would be subject to the separate agreement with the COSA and administered by SAWS, concerning construction, operation and maintenance (O&M). The Golf Course Environmental Management Plan includes the following significant conditions that are above and beyond existing development requirements and regulations that the Applicant would be required to follow:

- Establishment of a retention/closed loop irrigation system for at least eighty-five percent (85 percent) of the golf course irrigated area to facilitate the capture of runoff from each golf course and routing of the runoff to the irrigation lakes where the runoff will be used as irrigation water;

- This provision is especially significant inasmuch as it will result in 100 percent removal of Total Suspended Solids and related constituents for both predevelopment loads and post development loads for as much as half of the “golf course” areas presently anticipated to be 250 - 300 acres, (100 - 120 hectares) or more than one-fourth of the entire developed area of the Property,
- ♦ Placement of a twelve inch (30.5 cm) clay shaping and subgrade layer or a synthetic liner below the eight inch (20.3 cm) required soil profile;
- ♦ Water quality management zone criteria shall be designed to identify potential water quality risks for specific conditions present within areas of each golf course for purposes of preparing specific management practices that shall be implemented within each zone. Water quality risk factors shall be delineated and considered, including soils, proximity to surface water, depth to permeable bedrock, proximity to sensitive features, and topography. The risk factors shall be addressed in golf course management practices;
- ♦ Golf course runoff not captured in the retention/closed loop irrigation system will be treated in accordance with specific water quality management zone criteria;
- ♦ All sensitive geologic (karst) features within the golf course shall be preserved and protected;
- ♦ Design shall include natural vegetative buffer strips around sensitive features and Federal Emergency Management Agency 100-year floodplains;
- ♦ Long term sampling and monitoring of surface and subsurface water quality;
- ♦ Limitations and specific approval and application requirements on chemical usage (which would be extended to non-golf course activities such as lawns and landscaping by separate deed restriction);
- ♦ Enforcement provisions and fines; and
- ♦ Specific best management practices for storage of chemicals, spills, storm water containment and cleansing, percolation and leaching in the soil profile, and more.

The COSA Agreement has been reviewed by the Service (Austin Ecological Services Field Office).

Further, the following methods and practices will be implemented in the design of the community under the Proposed Alternative in residential and non-golf related areas:

- ♦ Best management practices (BMPs) in accordance with the TCEQ’s requirements will be utilized to treat storm water runoff from commercial and multi-family residential developments. These BMPs may include sedimentation/filtration basins, vegetative filter strips, retention/detention basins, and/or grassy swales. BMPs will be sized and located in accordance with TCEQ’s Technical Guidance Manual RG-348 (1999) to remove at least 80 percent of the incremental increase in the annual mass loading of total suspended solids caused by development of these sites.
- ♦ For the single-family residential development located within the westernmost portion of the Proposed Alternative, a sedimentation/filtration basin will be utilized to treat stormwater runoff from this approximately 45 acre development. The basin will be sized and located in accordance with TCEQ’s Technical Guidance Manual RG-348 (1999) to remove at least 80 percent of the incremental increase in the annual mass loading of total suspended solids caused by development of this single-family area.

- ♦ For low-density single-family residential developments within the Proposed Alternative, vegetated buffer strips and areas and grassy swales may be utilized to provide substantial additional removal of pollutants from storm water runoff from streets and residential lots.
- ♦ The 100-year ultimate development flood plains and sensitive recharge features will be preserved. The 100-year ultimate development flood plain represents the floodplain after development of the entire watershed for each drainage way and represents a larger area than the Federal Emergency Management Agency (FEMA) floodplain.
- ♦ For non-golf course land, including single-family residential, multi-family residential, resort, and other commercial land uses, only organic fertilizers, pesticides, and herbicides may be used per community restrictions. No pesticide or herbicide applications will occur in buffer zone areas.
- ♦ Owner educational materials related to adopted BMPs for fertilizer & pesticide use and water conservation measures will be provided to all subsequent property and homeowners.
- ♦ Native-scaping and low-water use landscape treatments will be encouraged in landscaping, lawns, ornamental landscape areas, greenbelt restorations, and open space areas outside of the golf courses.
- ♦ A prohibition will be imposed on the storage of fuels for construction of areas outside the golf courses, whereas under current standards, up to 250 gallons of fuels may be stored without being regulated and up to 500 gallons may be stored if subject to TCEQ regulations

For the golf course areas, the following additional BMPs will be utilized to protect water quality:

- ♦ The golf courses will include graduated levels of vegetated buffer strips to the FEMA 100-year floodplain and sensitive features;
- ♦ An extensive monitoring plan in and around the Tournament Players Course San Antonio Golf Village golf course areas is included. Periodic monitoring of storm water runoff, golf course irrigation lakes, and monitoring wells will be conducted to evaluate the effectiveness of Best Management Practices. Water analysis will cover a broad range of analytes including herbicides, pesticides, and fungicides used on the golf courses.
- ♦ Specific trigger levels have been established that will initiate further evaluation and modification of land management practices.
- ♦ A prohibition on the installation of underground storage tanks systems;
- ♦ Severe limitations on the installation of aboveground storage tank systems above those that are standard requirements of the TCEQ;
- ♦ Severely limited storage of up to only five (5) gallons of fuels at construction trailers or other structures by any contractor during construction of golf course related improvements
- ♦ Limitations and provisions for specific prior approval and application procedures and requirements on chemical usage;
- ♦ Additional specific best management practices for storage of chemicals, preparedness for and handling of spills, storm water containment and cleansing, and reduction of percolation and leaching in the soil profile.

For both residential and golf related areas, the following voluntary BMPs, protocols and procedures will be implemented and followed:

- Gates will be provided to limit access to any new karst features which may be discovered in the course of construction and are preserved under other provisions herein. The gates will be of the same construction as those already provided to one feature on the site, as designed and placed by Mike Warton of Warton and Associates, Inc.
- LIC will continue to use (already in place) a protocol which they use on all projects over karstic limestone which specifies procedures which contractors must observe in the event they locate an interstitial void or feature, which includes protection, inspection by professionals, sampling for troglobitic species, and either preservation or closure per TCEQ approved methods, depending on the results of these investigations
- Vegetated stream buffers (such as those buffering the FEMA floodplain) will be sized in compliance with SAWS regulations.
- Basins and other erosion controls will be utilized as sediment traps during construction.
- Water quality basin material traps will be located along Cibolo Canyon Blvd, a major thoroughfare, to treat its runoff.
- Basins that are temporary or permanent will be maintained by the property owner's association either directly or by third party contractors. The party maintaining the basin will be identified on signs located at the basin.

4.2 Alternative Two –Full Development Plan on Evans Road Tract with Wolverton Tract and the North Triangle Tract

The Service is advised that the plan for the Evans Road Tract portion of the Property since its purchase by LIC in 1986 was to construct a series of high density, small lot neighborhoods to be built out by a number of production builders over a period of twenty to thirty years. LIC, along with a number of neighboring landowners, entered into an agreement with the COSA and SAWS to extend major water distribution lines to the site in exchange for fully approved and vested development rights on the Evans Tract. The money was paid by LIC, and the water capacity was committed to the Tract. A land plan to achieve the full commitment was processed and approved by the City. This full development plan is on file with the City. As shown in detail in Figure 3, the full development plan includes full development of the Evans Road Tract property into 5,620 small lots, 2,200 apartments, 72 acres (29.1 hectares) of commercial use sites, and approximately 100 acres (40.5 hectares) of parks. LIC believes, and the record shows, that COSA approved this full development plan for the Evans Road Tract in January, 1995, as described under this alternative. As a result, the full development plan is now exempt from more recent City development regulations that would impose greater restrictions on impervious cover, greater restrictions on intensity, more restrictive COSA environmental and water quality regulations. Therefore, the Evans Road Tract is “grand-fathered” under COSA and Texas law from need for compliance with other current and intervening ordinances and requirements enacted by both City of San Antonio and SAWS. The Proposed Alternative proposes development at far lower intensities than those that are “grand-fathered”.

Under Alternative Two, LIC would propose that the other portions of the Property, those portions on the Wolverton and North Triangle Tracts, would be developed with 820 additional residential

lots that would fall under present COSA and SAWS regulations. (see approved full development plan at Figure 3).

The opportunity to create the lower intensity Golf Village and resort project utilizing all of the three tracts in synergy, when it occurred and as long as it remains viable, has moved the approved Alternative Two to a position that represents a second but presently not preferred alternative for the Applicant. It was rejected in favor of the lower intensity residential and commercial development and far greater amounts of preserved green space, the voluntary water quality protections, the voluntary reductions in impervious cover, and other greater environmental benefits that will result from execution of the Proposed Alternative described in this present Permit/HCP. The presence of the golf facilities and resort involvement in the Proposed Alternative makes lower intensity and other attributes of that community plan more predictable in many of those attributes as well as financially viable for the Landowner.

4.3 Alternative Three -- Low Density, Large Lot Community -- No Golf or Resort

Alternative Three would continue the large lot residential development trend of the Clear Springs, Fossil Ridge, and Fossil Creek Subdivisions. These developments already lie north and south of LIC's development and are nearly fully developed.

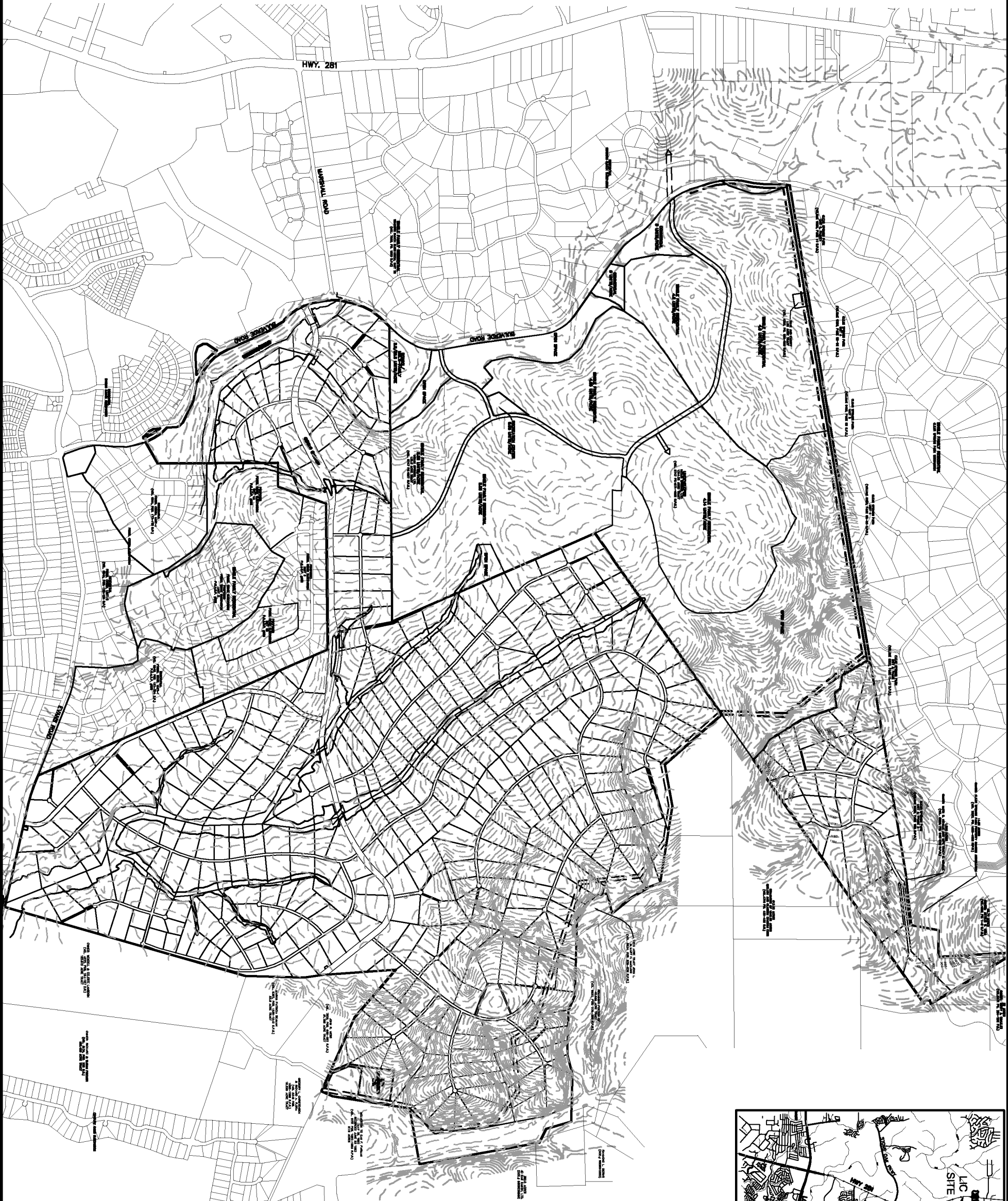
Under the scenario evaluated for this configuration, the Property would be built out through lot sales to private builders or to individual lot buyers to either hold or build on. The conceptual plan shown in Figure 8 for Alternative Three is comprised of approximately 105 lots in the Property averaging six acres (2.43 hectares) in size.

As is the case in the other existing projects mentioned above, additional community green space is either not provided or minimized in favor of rear lot areas that include the fee simple transfer to the lot owner of portions of tributary and drainage areas that might otherwise be community set-asides or buffer zones. This is considered important in the marketing of larger lots; large lot owners prefer to own these green space acres rather than be adjacent to common greenbelts.

This type of land use typically results in a "patch-work" array of homes and related structures, with interspersed green areas. While this sort of configuration usually supports numerous and abundant wildlife, it is not consistent with the habitat requirements of the GCWA. Even low density development adversely impacts GCWA habitat when it is scattered throughout the habitat. Indeed, in comparison to the Proposed Alternative, Alternative Three may have greater overall impact on GCWA habitat because more land will be divided into lots and subject to subsequent disturbance and already fragmented and patchy vegetated areas would be further fragmented.

The differences in infrastructure requirements makes the higher intensity, centrally-sewered plan (Alternative Two) preferable to an overall un-clustered or "estate" plan (Alternative Three) that would add additional direct disturbance due to additional areas needed for septic field systems in place of sewerage in road right-of-ways. Septic systems, when "working properly" dispose of essentially raw sewage by discharging it underground after minimal 'treatment' in buried tanks, if any. When "working improperly" raw sewage can be discharged up to the surface to flow into watercourses, or into underground openings. From many perspectives, neither is a preferred

THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADEQUATELY ALIGNED, RESIZED, OR PAID (MAGNIFY) MATERIALS BEARING THE CREATORS ORIGINAL SIGNATURE AND SEAL.



LEGEND	
	EXISTING CONTOURS
	PROPOSED CONTOURS
	WATER SEWERAGE PLAN
	PROPERTY LINE
	ROAD
	BOUNDARY OF BEAN COUNTY, TEXAS
	BOUNDARY OF BROWN COUNTY, TEXAS
	BOUNDARY OF BROWN COUNTY, TEXAS
	BOUNDARY OF BROWN COUNTY, TEXAS

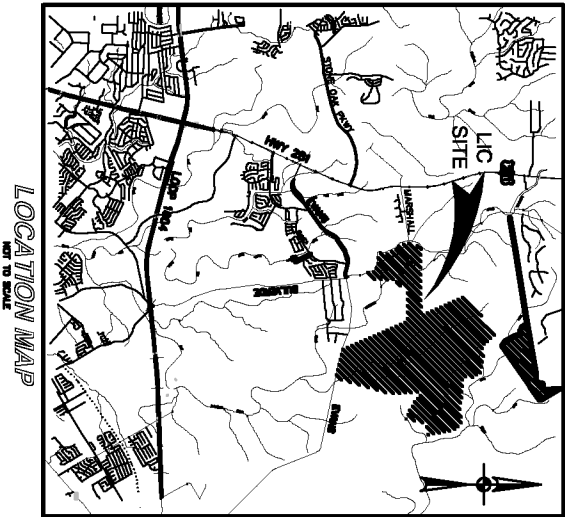


FIGURE 8

JOB NO. 5538-00
DATE: SEPTEMBER 2004
DRAWN BY: TM
CHECKED BY: CGL, DAWSON, BT
SHEET 1 OF 1

CIBOLO CANYON
SITE PLAN
ALTERNATIVE #3

**PAPE-DAWSON
ENGINEERS**
1965-2005 ■ 40 YEARS OF EXCELLENCE

555 EAST RAMSEY

SAN ANTONIO TEXAS 78216

PHONE: 210.375.0000
FAX: 210.375.9010

REVISIONS

solution to modern central treatment and collective conveyance of sewage as is proposed in the Proposed Alternative.

This alternative was finally rejected due to its potentially greater impact on the GCWA and the fact that, LIC advises, existing off-site infrastructure investments that are currently in excess of \$14 million must ultimately be recouped in the sale price of the land as some number of parcels. This investment has been made already, intending to serve several thousand units, and it is far in excess of what would have been required for a low density large lot community in the same area and one that would then be competing in the same market for the same buyer as other large lot communities surrounding Master Phases I and II. Lot cost is affected dramatically by the requirement to recover the \$14 million plus interest in the sale of the land as subdivided parcels. The addition of the off-site infrastructure cost would make the large lot sale price uncompetitive in the marketplace, not likely to be sold, and at the same time offers no environmental advantage over other preferred concepts.

4.4 Alternative Four – No Action

This alternative assumes that the proposed development of the Property does not occur and that no application for an incidental take permit is processed. Under this alternative, the Applicant would not construct the Cibolo Canyon Community project as it is described in the Proposed Alternative section. The Applicant would abandon any plans for future use of the Properties. Under the No Action alternative, the entire Master Phase II of Cibolo Canyon Property would continue to be used for ranchland and hunting. Ranching would include activities such as juniper clearing and raising livestock. In the likely event that revenues from ranching and hunting could not recover infrastructure expenses accrued to date and/or cover the ongoing expenses, the Applicant would have to pursue other methods to cover expenses of its ownership or sell the Property to a third party. Acquisition by a third party would likely require them to consider similar means to compensate for the ongoing expenses of the Property. This alternative provides an unlikely means of recovering economic value for the Applicant; therefore, the Applicant chose not to pursue this option.

5.0 ENVIRONMENTAL CONSEQUENCES

5.1 Alternative One – Proposed Alternative

5.1.1 Direct Impacts

As defined in Council on Environmental Quality (CEQ) regulations (40 CFR § 1508.8), “direct effects” are effects which are caused by the action and occur at the same time and place. Effects and impacts as used in these regulations are synonymous. Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial